



TECHNICAL DATA SHEET Coating 2063-506 A&B

General Description

This solvent based condensation control antifog coating is a two part reactive polyurethane coating. The coating prevents fogging under temperature and humidity conditions. Part A is a resin in solvent solution and Part B a reactive isocyanate that when combined produce a heat stable and chemical resistant clear polyurethane film after thermal cure. Post thermal cure the antifog coating provides scratch and mar resistance to coated substrates.

Typical Physical Properties

| <u>A Property</u> | <u>Temp</u> | <u>Unit</u> | <u>Approved Spec. Range</u> |
|--|-------------|-------------|-------------------------------|
| Appearance (Visual) | RT | | Clear or Slightly Hazy Liquid |
| Color (Visual) | RT | | Straw Yellow |
| Non-Volatiles (NVN 1.1) | NA | % | 6.5 - 7.3 |
| Specific Gravity (SPG 1.0) | 25° C | g/ml | 0.880 - 0.890 |
| Viscosity (BKV 1.0) (#1 Spindle @ 60 rpm) | 25° C | cps | 40 - 75 |

| <u>B Property:</u> <i>adhesion promoter</i> | <u>Temp</u> | <u>Unit</u> | <u>Approved Spec. Range</u> |
|--|-------------|-------------|-----------------------------|
| Appearance (Visual) | RT | | Uniform Liquid |
| Color (Visual) | RT | | Slightly Yellow |
| Non-Volatiles (NVN 1.1) | NA | % | >99.3 |
| Viscosity (BVK 1.0) #1 spindle @ 30 rpm | 25° C | Cps | 1,300 – 2,200 |

Coating Methods and Application

Antifog coating 2063-506 A&B can be roll, curtain, dip and spray coated. The coating solution as supplied is adequate for application to most plastics. As process variables differ, a patch test should always be performed to determine solvent tolerance of each substrate.

In HVLP spray applications use 5 to 10% dilution at 8-10 psi typical of automotive paints. If the spray fan of coating shows spotty coverage increase air pressure incrementally until an even coating. The 2063-506 A&B coating can be layered to achieve coating thickness.

Dip coating is generally done at 20 to 25% dilution at 1 to 10 inches per minute withdraw rate.

Spin coating 15 to 20% dilution and flexo-gravure web 5 to 10% dilution on 60° anilux rolls.

For modification of coating see Coating Mixing section below. For sheeting applications the recommended dry coating thickness is .5 to 1.0 mils (10 to 25 microns). Condensation sheeting effect is indifferent to coating thickness however thickness testing should be done per each substrate to determine acceptable coating life and condensation control property level. Thick coatings can produce cloudiness in coating.

The following plastics have been coated successfully acrylic, polystyrene, polyethylene terephthalate (PET), polyurethane, polycarbonate and polyvinyl chloride.



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Coating Thickness

The recommended dry coating thickness is .5 to 1.0mils (10 to 25 microns). Coating <.5 mils can have reduced antifog properties due to thin film thickness. Estimated 2063-506 A&B coating coverage is 750 to 1200 sq.ft. per gallon. Results will vary based on method of application and coating thickness.

Coating Mixing

Coating should be filtered through one to five micron filters in continuous cycle systems or filter before application. All residual coating must be filtered before reuse.

Mixing Ratios: Part A to B 95:10, 90:5 Mix for 5 to 10 minutes with low speed stirring. When mixing the relative humidity should be below 50%. Very high humidity can cause the coating to appear hazy apply a longer thermal cure cycle if this condition is detected. Coating solution post mix will remain useful for 2-3 days at room temperature longer if chilled. Both Part A resin solution and Part B curing agent will have an unused shelf life of 12 months if stored in a cool dry area in tight containers.

Acrylic: Cure at 70-100C for 30 mins.

Styrene, Polyvinyl Chloride: Cure at 70-80C for 30 mins.

Polycarbonate, Polyethylene Terephthalate: Cure at 100C – 125C for 30 mins.

Catalyzed Additive: Catalyst accelerator T-12 can be added at .025 to .05 % weight after mixing both Part A and B to speed up curing. Catalyzed coating will fully cure in 45 mins at 66C/150F or 3 mins at 107C/225F. Pot life of catalyzed coating is reduced to < 24hrs as viscosity will increase to a solid gel state.

Dilution of antifog solution: Use only a urethane grade Diacetone Alcohol to adjust viscosity for the application method. Dilute with Diacetone Alcohol at 5 to 15% level, do not dilute the coating solution >25% as this will impact the overall antifog properties.

Cleaning

Best to clean all equipment before coating cures. Use MEK, MIBK, DAA or similar solvent. Dispose of waste according to local ordinances.

A properly cured coating can be cleaned with commercial water based cleaners and detergents. A properly cured coating can withstand brief exposure to chlorinated hydrocarbons and alcohols.

Substrates prior to application of antifog coating solution should be free of grease and oils as this will destroy the antifog properties. Clean contaminated substrates with an alcohol followed by a water rinse and then dry before application of antifog solution.

Safety Precautions

Flash Point : 85F

Skin contact may cause local redness; wash with soap and water. Eye contact may cause redness or swelling of conjunctiva; flush with water for 15 minutes. Swallowing or inhalation may cause headache, vomiting, diarrhea, dizziness, drowsiness, nausea; administer oxygen or fresh air. Keep away from heat, flame and sparks. Vapors may be ignited by static sparks. Extinguish with Dry Chemical; Foam; CO₂. Water may be ineffective. Use proper steel drum grounding during liquid transfer. Wear neoprene gloves, safety glasses and protective clothing. (PLEASE REFER TO THE MSDS!)



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Test Results

Tests performed on Polycarbonate Automotive Head-light Covers:

- Thermal Shock Cycle test:
 - Heat to 80C in (30 - 60 minutes)
 - Hold at 80C for 2 hours
 - Reduce to -30C in (1 - 2 hours)
 - Hold at -30C for 2 hours
 - Then heat to 20C in (30 - 60 minutes)
 - No defect in coating detected (PASS) , no cracking or delamination, Coating performance is excellent.

- Cold Shock Test:
 - Cool sample to -40C +/- 4C for 72 hours
 - quickly place in 23C +/- 4C environment for 30 minutes
 - (PASS) no cracking or delamination, Coating performance is excellent.

- Aging and Chemical Exposure Test:
 - Heat coated sample to 100C +/- 2C for 2 hours
 - Dip in 1% H₂SO₄ (ACID) for 10 minutes (Pass, no damage to coating.)
 - Heat coated sample to 100C +/- 2C for 2 hours
 - Dip in 1% KOH (alkaline) for 10 minutes (Pass, no damage to coating.)
 - Heat coated sample to 100C +/- 2C for 2 hours
 - Dip in 3% NaCl (Salt Water) for 10 minutes (Pass, no damage to coating.)